WHAT IS CLAIMED IS:

1. An apparatus for measuring bio-impedance due to joint movement, comprising:

a constant current source comprised of an oscillation frequency circuit and a voltage-to-current conversion circuit for generating a weak current;

current stimulus electrodes for allowing the weak current to flow from a point of a living body to another;

at least two voltage detection electrodes for measuring voltage on a certain region of the living body through which the weak current flows;

a demodulator for demodulating the voltage measured by the voltage detection electrodes;

a signal gain and offset controller for controlling gain and offset of signals that have passed through the demodulator; and

an isolated amplifier for isolating the constant current source from the signals.

2. The apparatus as set forth in claim 1, further comprising a low-pass filter for eliminating noise other than impedance signals that vary according to the joint movement from the signals that have passed through the demodulator.

3. The apparatus as set forth in claim 1, further comprising gain and offset controllers for controlling gain and offset of the signals that have passed through the isolated amplifiers.

4. The apparatus as set forth in claim 1, wherein the weak current has a frequency of 40 KHz and a magnitude of 300 μA.

5. The apparatus as set forth in claim 1, wherein the voltage detecting electrodes are positioned at m points on each of n-1 lines that divide an interval between a first joint and a second joint, between which the weak current flows, into equal n parts (m and n are natural numbers).

6. The apparatus as set forth in claim 1, wherein the voltage detecting electrodes are positioned at:

two points on each of three lines that equally quadrisect an interval between an ankle and a knee joint;

four points on each of two lines that equally trisect an interval between the knee joint and a hip joint; and

a certain point between the ankle and toes.

7. The apparatus as set forth in claim 1, wherein the voltage detecting electrodes are positioned at:

two points on each of three lines that quadrisect an interval between a wrist and an elbow joint;

four points on each of two lines that trisect an interval between the elbow joint and a shoulder joint; and

a certain point between the wrist and fingers.

8. A method of measuring bio-impedance attributable to joint movement, comprising the steps:

generating a weak current by use of a constant current source;

causing the weak current to flow from a point to another point;

forming L voltage detecting electrode pairs from voltage detecting electrodes positioned at m points on each of n-1 lines that divide an interval between a first joint and a second joint, between which the weak current flows, into equal n parts (m and n are natural numbers), using combination (mC2=L);

detecting bio-impedance at certain periods from J (L-K) voltage detecting electrode pairs that are obtained by subtracting K voltage detecting electrode pairs, each of which exists on a single dividing line, from the formed L voltage detecting electrode pairs; and

selecting a pair of voltage detecting electrodes having a highest variation of bio-impedance.

9. The method as set forth in claim 8, wherein the weak current has a frequency of 40 KHz and a magnitude of 300 μA.

10. The method as set forth in claim 8, wherein the m points are two points on each of three lines that equally quadrisect an interval between an ankle and a knee joint between which the weak current flows.

11. The method as set forth in claim 8, wherein the m points are two points on each of three lines that equally quadrisect an interval between an ankle and a knee joint between which the weak current flows, and four points on each of two lines that equally trisect an interval between the knee joint and a hip joint.

12. The method as set forth in claim 8, wherein the m points are four points on each of two lines that equally trisect an interval between the knee joint and a hip joint.

13. The method as set forth in claim 8, wherein the m points are two points on each of three lines that equally quadrisect an interval between an ankle and a knee joint between which the weak current flows, and a certain point between the ankle and toes.

14. A system for analyzing joint movement using variations of bio-impedance attributable to the joint movement, comprising:

a constant current source comprised of an oscillation frequency circuit and a voltage-to-current conversion circuit for generating a weak current;

current stimulus electrodes for allowing the weak current to flow from a point of a living body to another;

a first channel comprised at least two voltage detection electrodes which positioned in a certain region between a hip joint and a knee joint, a demodulator, a gain and offset controller and an isolated amplifier;

a second channel comprised at least two voltage detection electrodes which positioned in a certain region between the hip joint and an ankle joint, a demodulator, a gain and offset controller and an isolated amplifier;

a third channel comprised at least two voltage detection electrodes which positioned in a certain region between a knee joint and the ankle joint, a demodulator, a gain and offset controller and an isolated amplifier;

a fourth channel comprised at least two voltage detection electrodes which positioned in a certain region between the knee joint and toes, a demodulator, a gain and offset controller and an isolated amplifier;

an Analog/Digital (A/D) converter for converting signals output from the channels into digital signals; and

a control unit for calculating the digital signals output from the A/D converter into angular variations of the joints.

15. The system as set forth in claim 14, further comprising a display unit for displaying values input to and calculated by the control unit.

16. The system as set forth in claim 14, wherein the control unit calculates the bio-impedance signals output from the channels into the variations of angles using X degrees/Y ohms = Z degree/ohm (in the case where a range of movement from a maximal flexion to a maximal extension of each joint is X degrees and a range of a variation of the bio-impedance is Y ohms) with respect to an increase or a decrease of 1 ohm.

17. The system as set forth in claim 14, wherein the certain region is a position where the variation of bio-impedance attributable to the joint movement is greatest.

18. The system as set forth in claim 16, wherein the control unit displays an avatar corresponding to the joint movement on the display unit using the bio-impedance signals attributable to the joint movement and a certain analysis

program.

19. The system as set forth in claim 18, wherein the control unit further displays a menu for monitoring and analyzing the joint movement and the bio-impedance signals on the display unit.